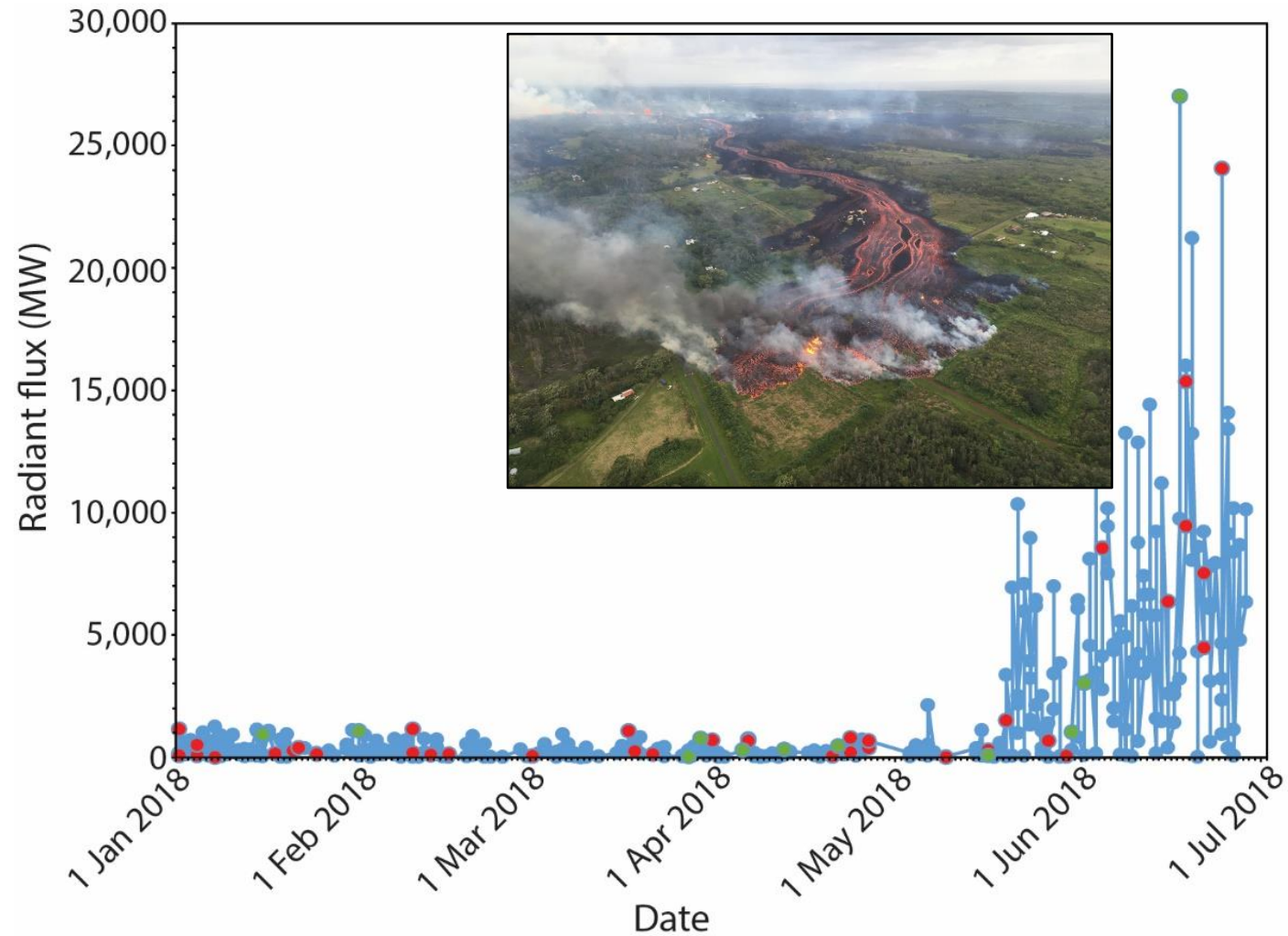


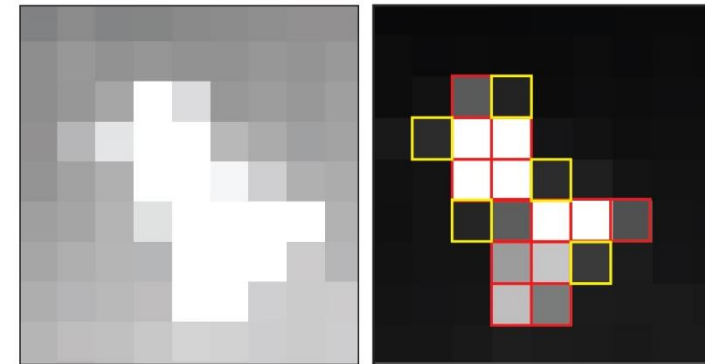
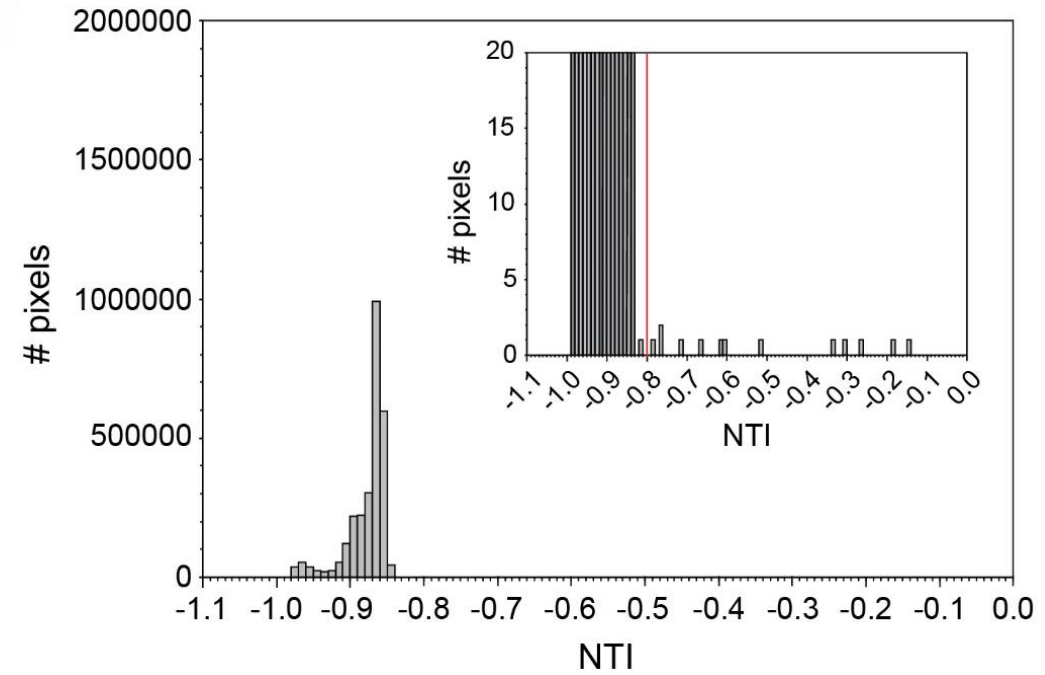
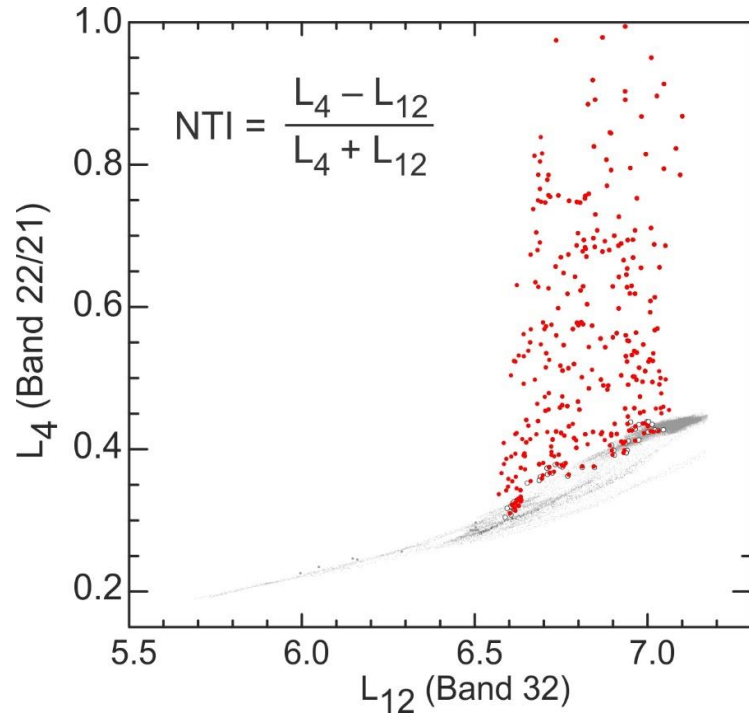
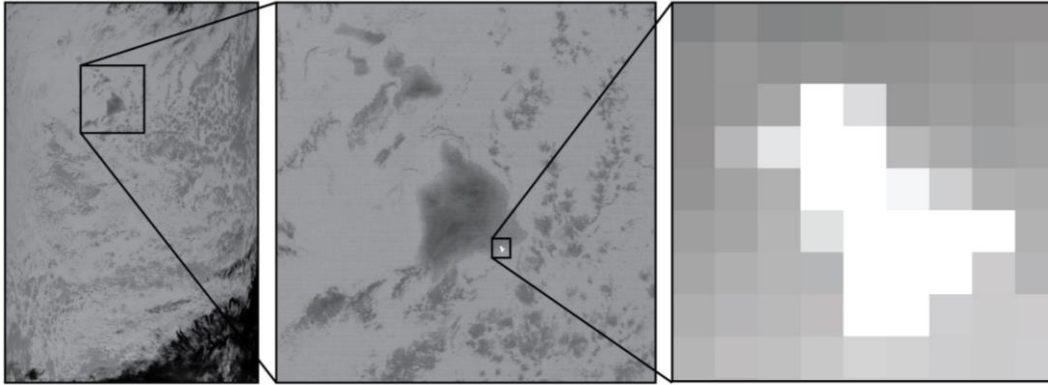
# MULTI-SENSOR ANALYSIS OF GLOBAL VOLCANIC THERMAL UNREST

Robert Wright

Hawai'i Institute of Geophysics and Planetology, University of Hawai'i at Mānoa, Honolulu, U.S.A.



# MODVOLC – CATALOGUING GLOBAL VOLCANIC THERMAL UNREST USING MODIS

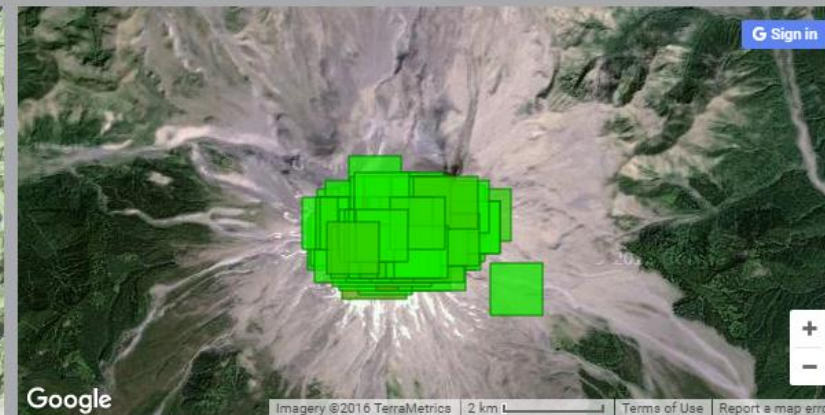


# MODVOLC

near-real-time satellite monitoring  
of global volcanism using MODIS



MODVOLC uses infrared satellite data acquired by NASA's MODIS instrument to monitor Earth's surface for the thermal emission signature of volcanic eruptions, wildfires, and anthropogenic heat sources (e.g. gas flares). Two MODIS sensors, one on the Terra satellite, one on the Aqua satellite, allow the entire Earth to be monitored every 48 hours. If an eruption is detected, its details are reported here, usually within 12-18 hours of the satellite passing over the volcano. You can search, plot, and download the data using the tools below. If you are unsure as to what you are looking at, [this page](#) provides links to published papers and other information that describe the data, and this website.



1. Which volcano are you looking for?

Volcano name:

Lat/Long/Center:

Volcano ID:

2. What period of time?

Start date:

End date:

3. Which MODIS sensor?

Terra ☒

Aqua ☒

4. What time of day?

Daytime ☒

Nighttime ☒

5. Observation geometry?

Sun glint angle:

Scan angle:

6. Which variable would you like to plot?

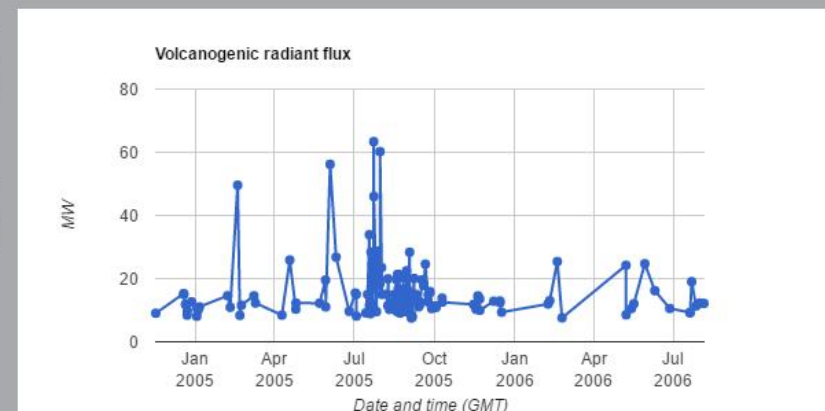
Number of hot-spot pixels ☐

Radiant flux ☒

3.959 $\mu$ m spectral radiance ☐

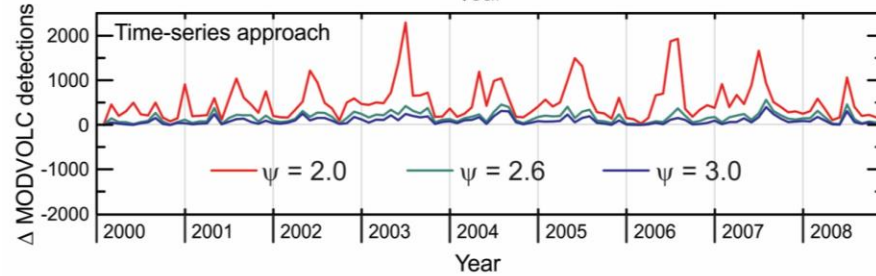
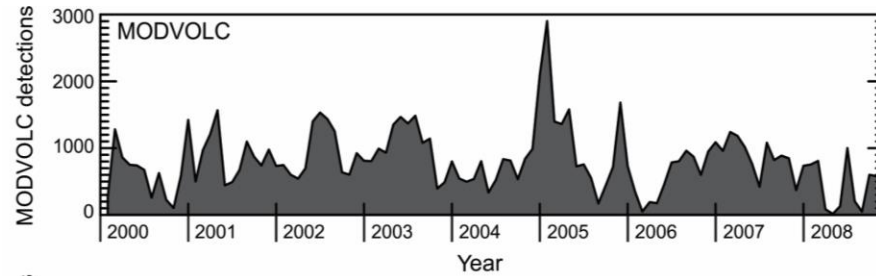
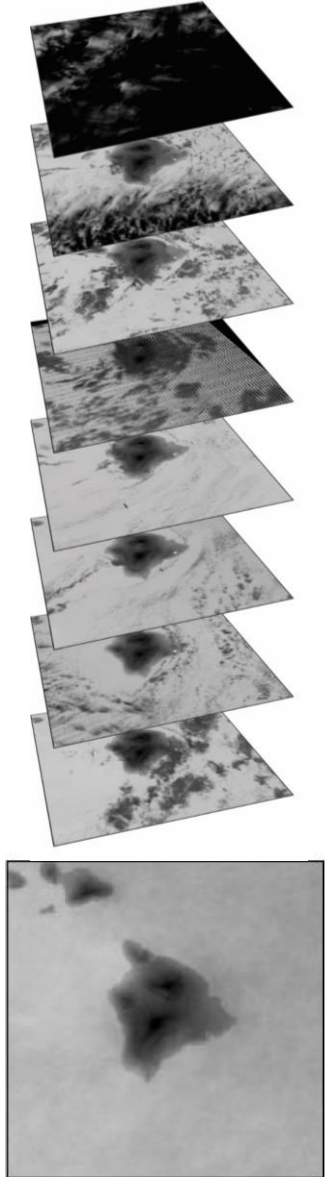
7. Progress

8. View/Save data

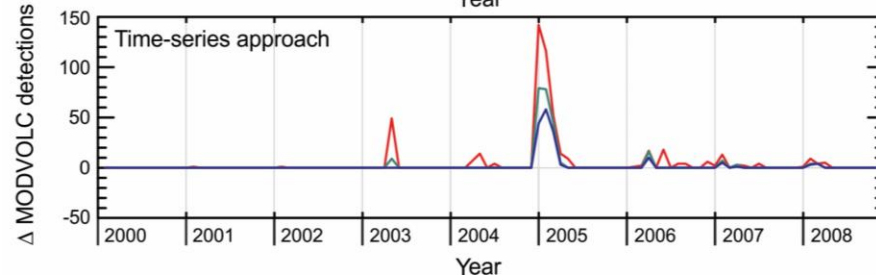
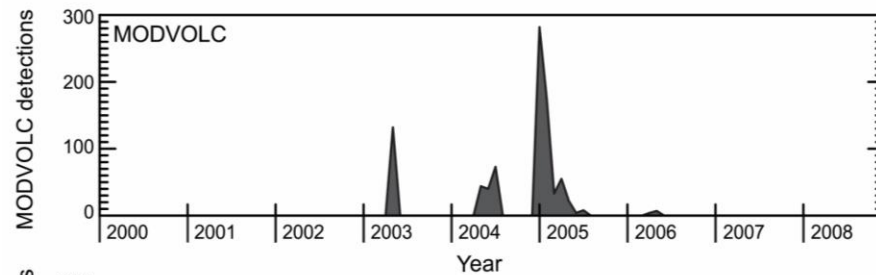
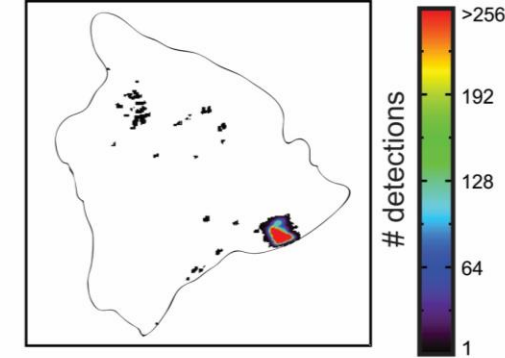




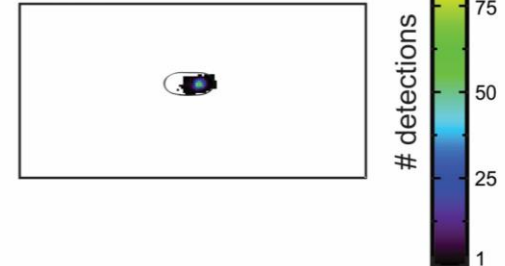
# AN IMPROVED PRODUCT AND TRANSITION TO VIIRS USING TIME-SERIES ANALYSIS



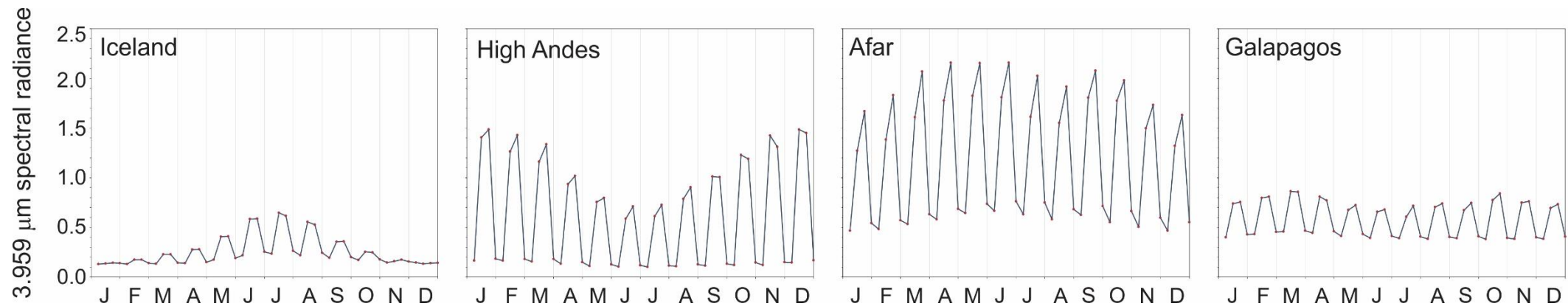
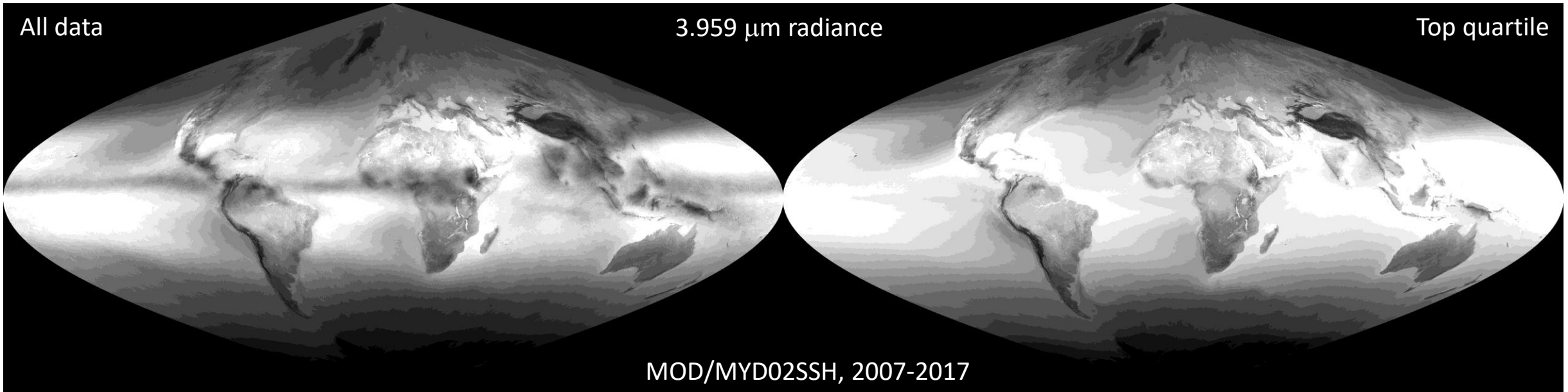
Big Island of Hawaii



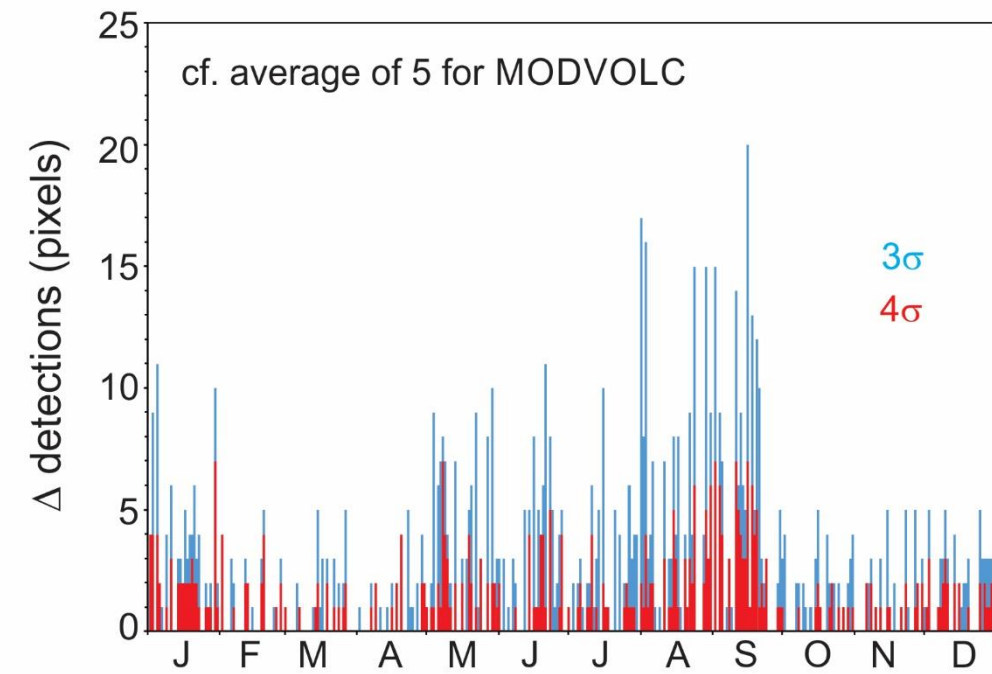
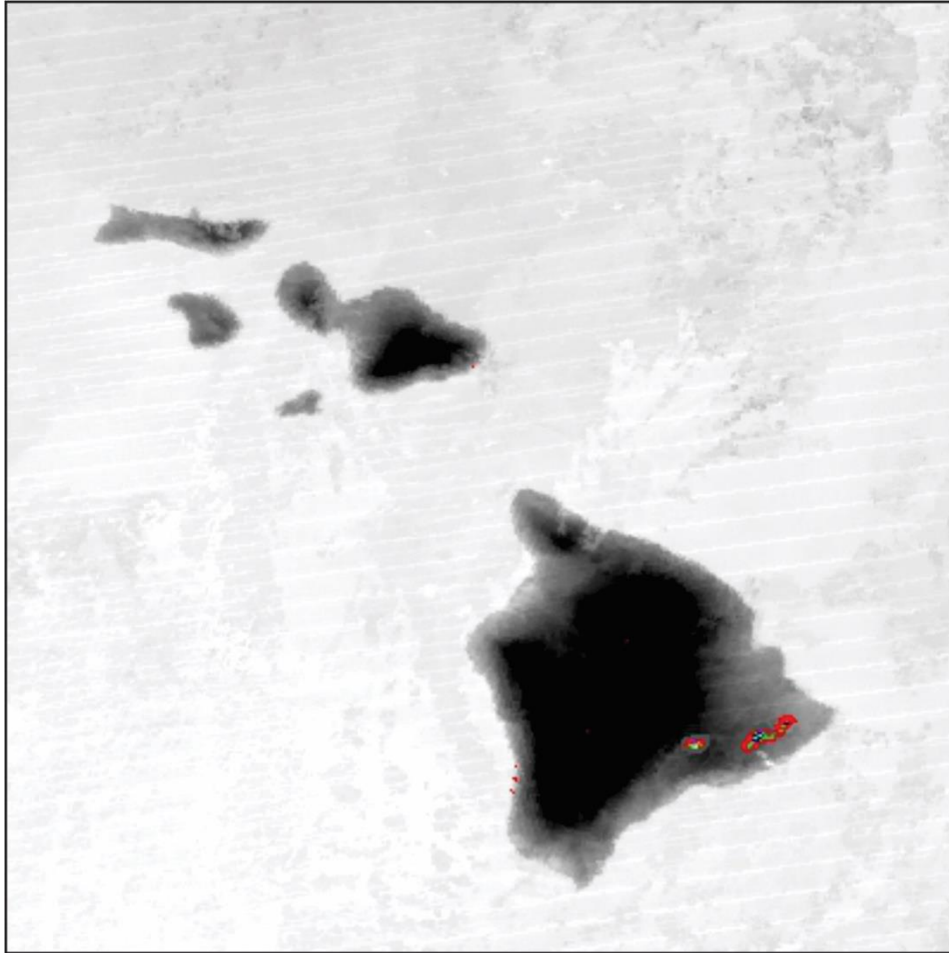
Anatahan



# REFERENCE FRAMES FOR GLOBAL APPLICATION OF THE TIME-SERIES APPROACH

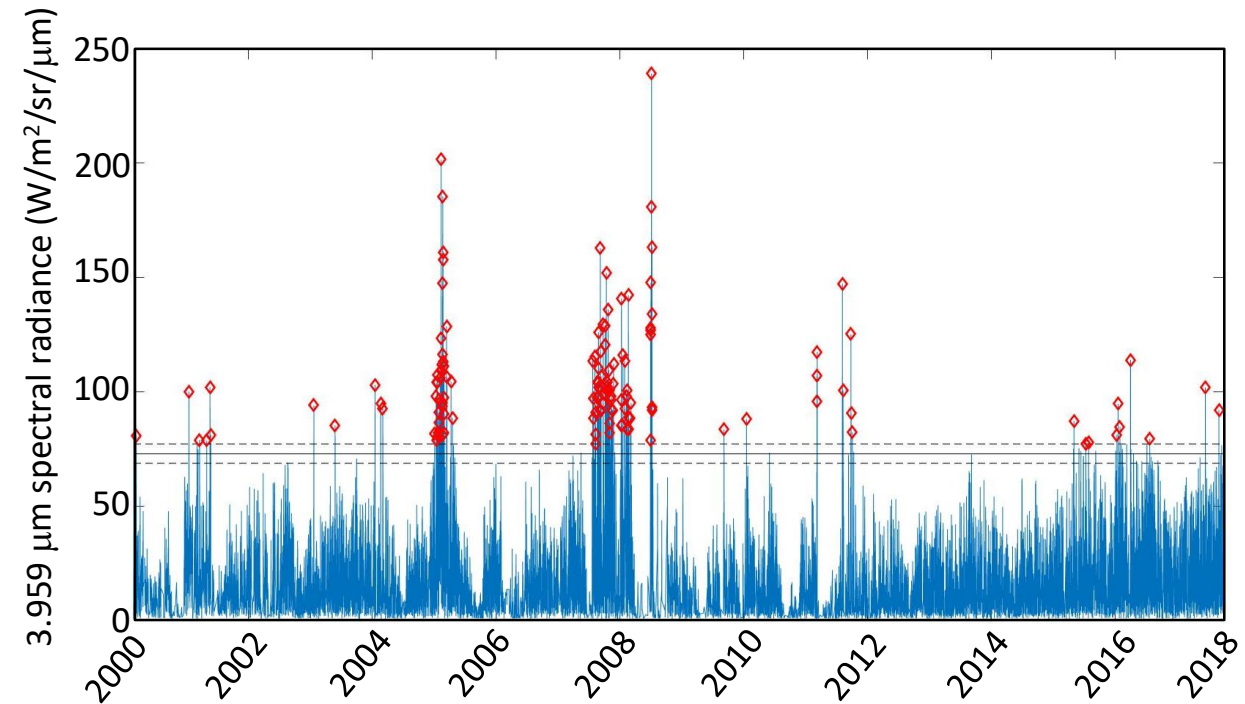
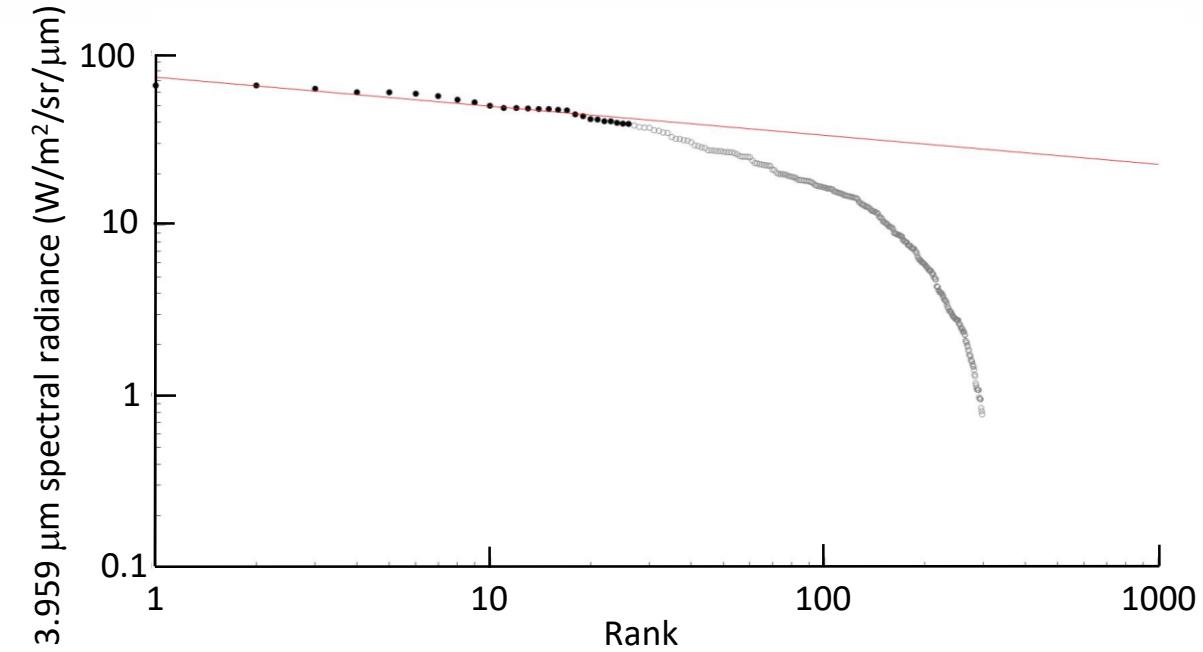


# SOME INITIAL RESULTS

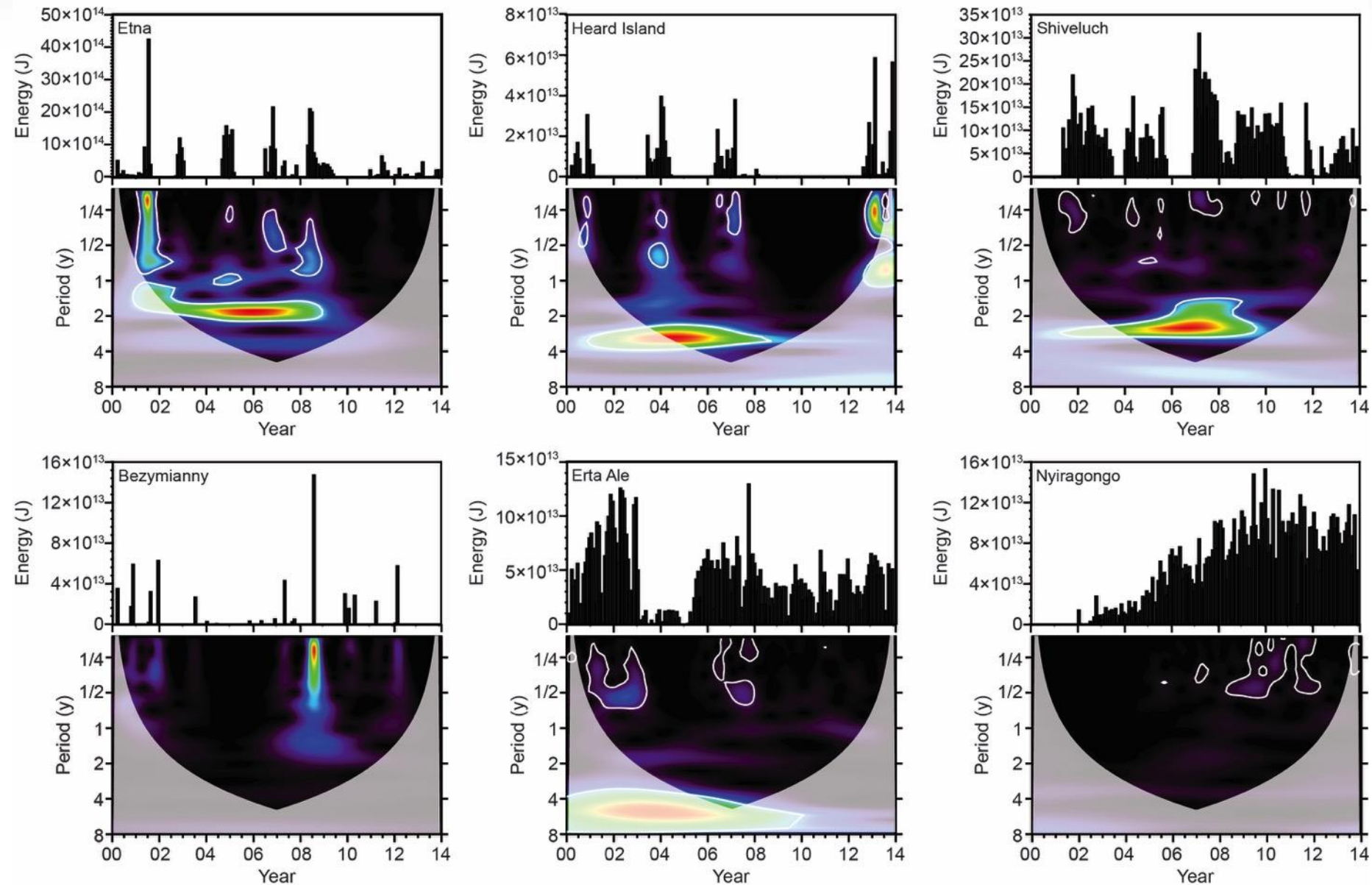




# USING MODIS FOR MORE INTELLIGENT RE-TASKING OF ASTER (OR A.N.OTHER SAMPLING MISSION)

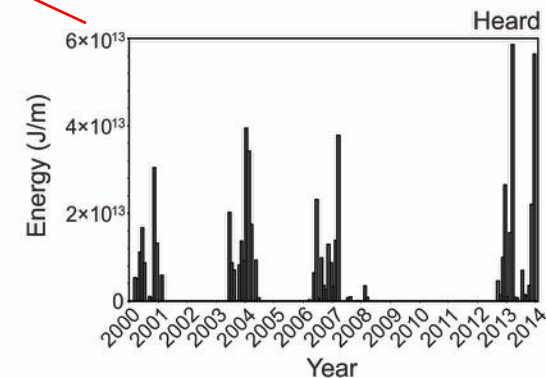
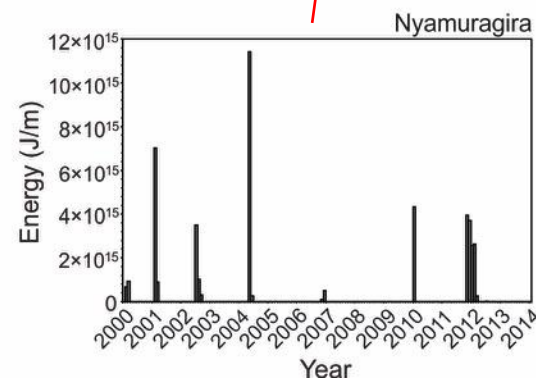
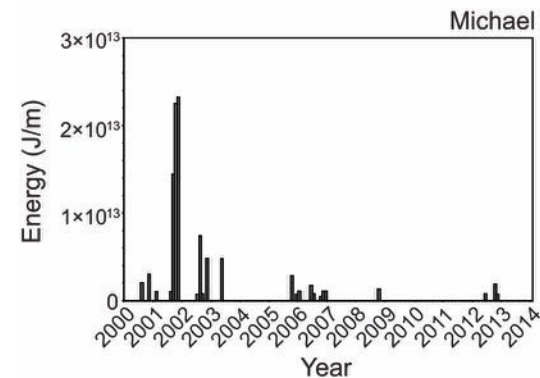
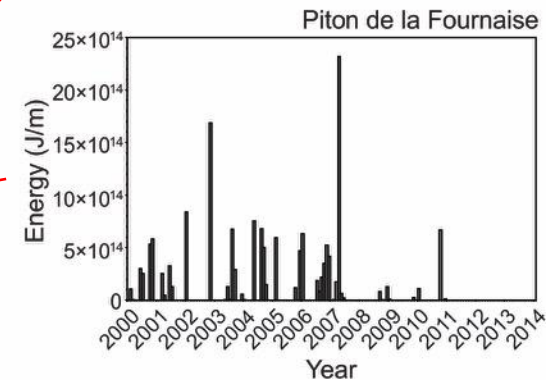
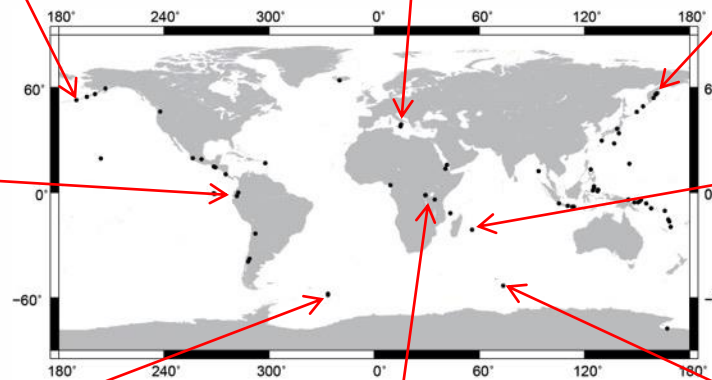
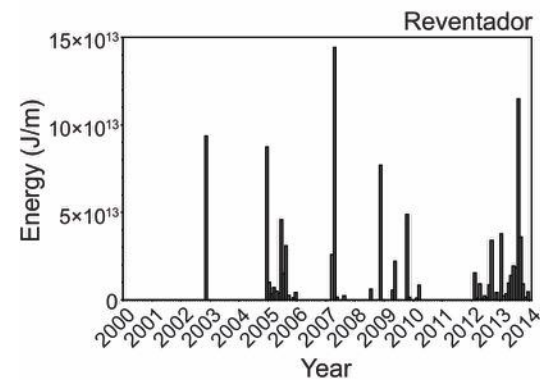
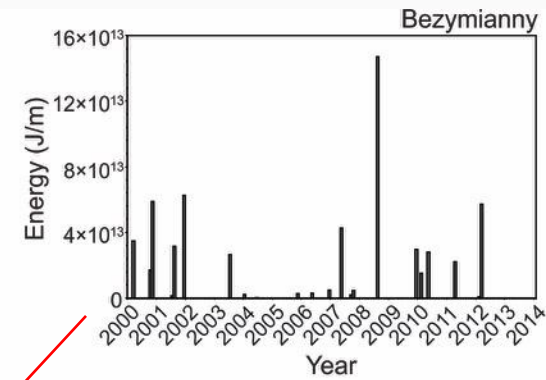
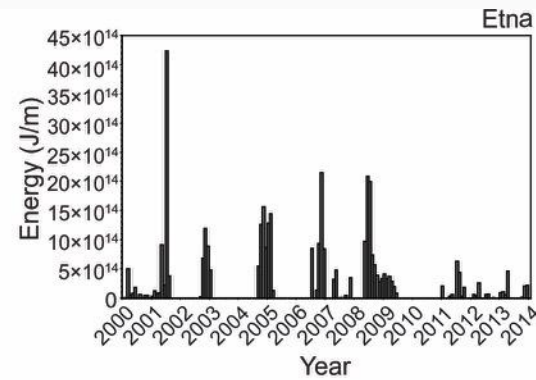
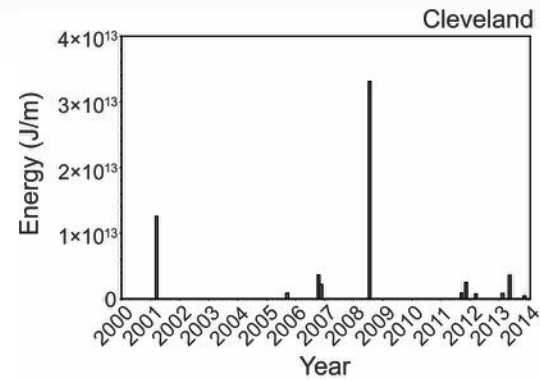


# CAN VOLCANIC POWER OUTPUT BE PREDICTED?

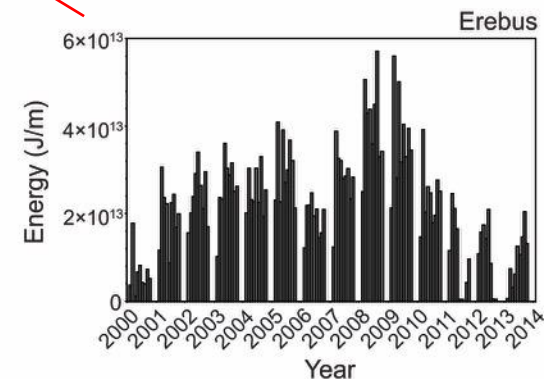
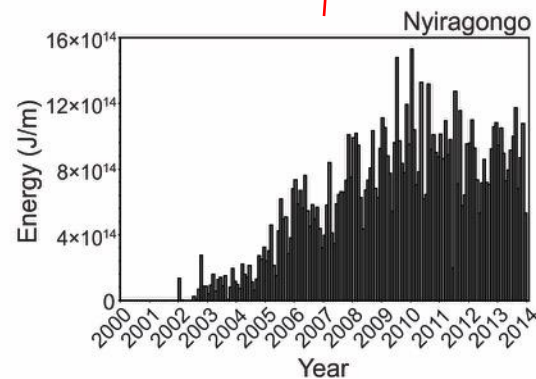
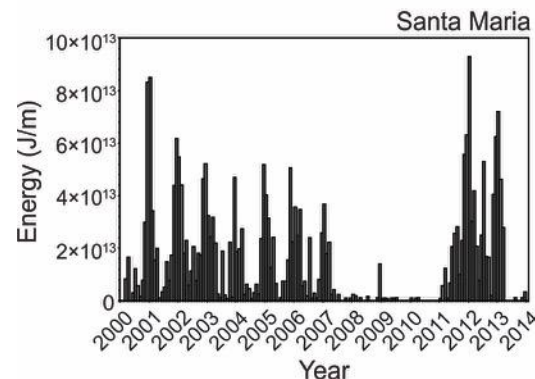
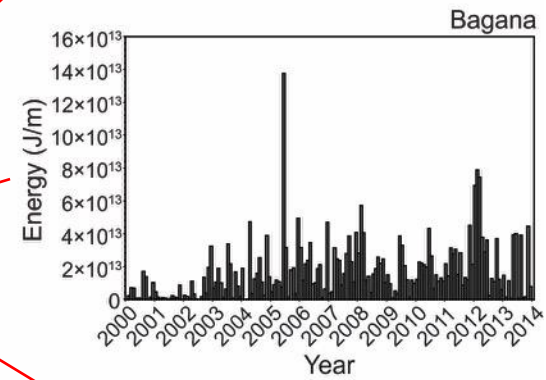
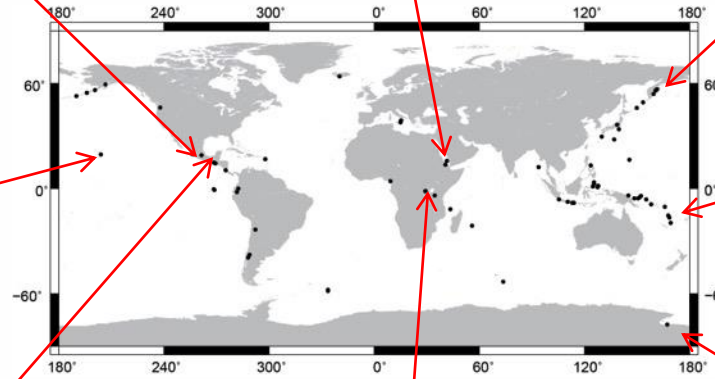
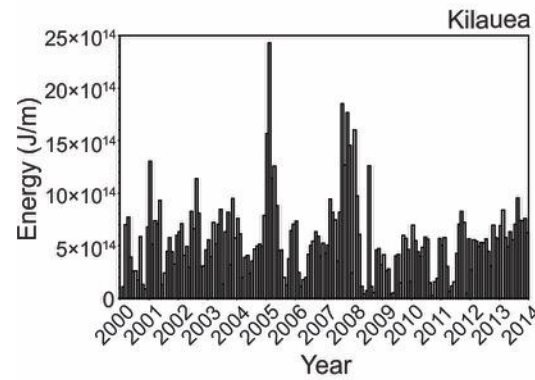
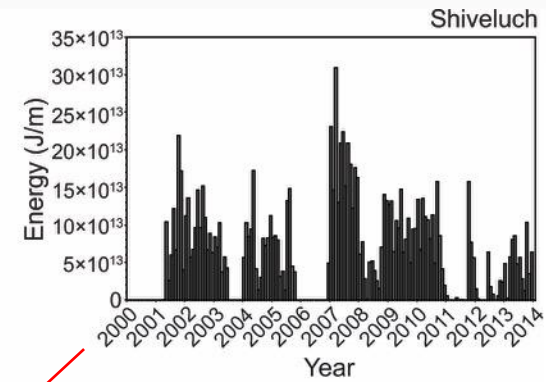
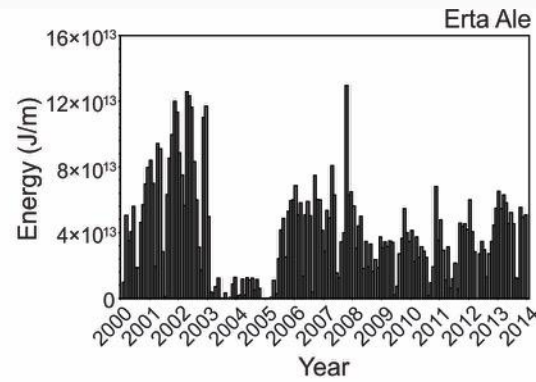
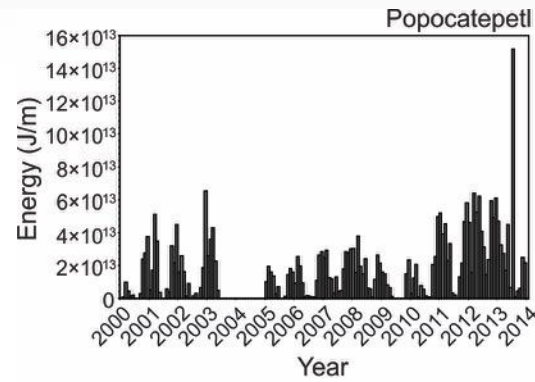




# SOME VOLCANOES HAVE BEEN EPISODICALLY ACTIVE



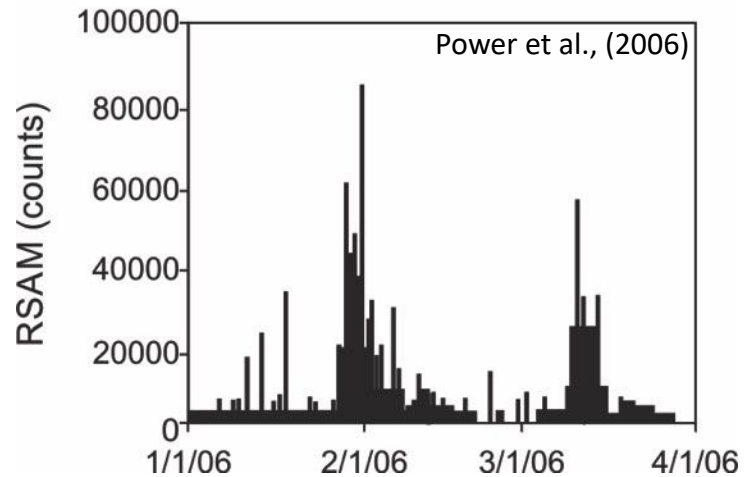
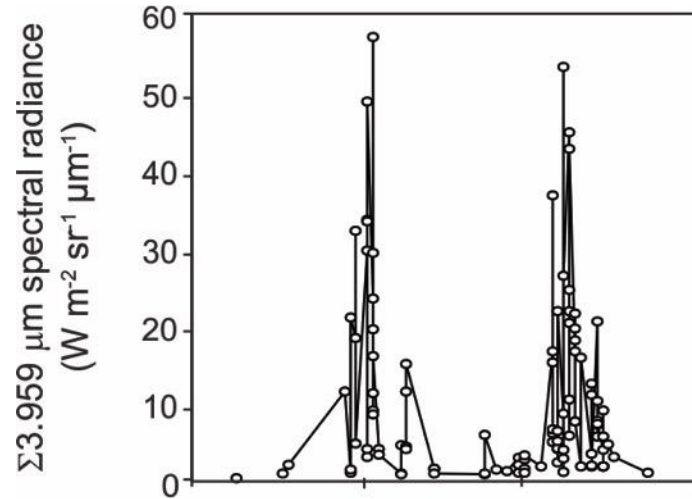
# SOME VOLCANOES HAVE BEEN PERSISTENTLY ACTIVE



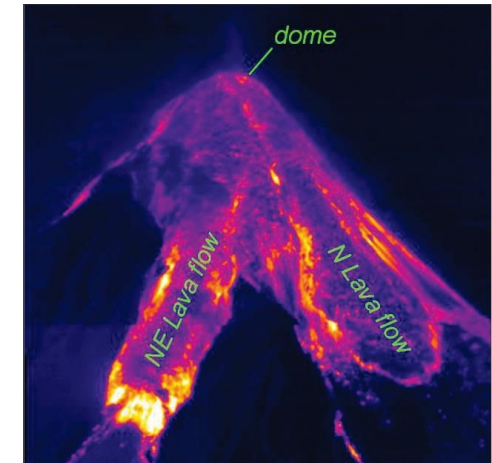
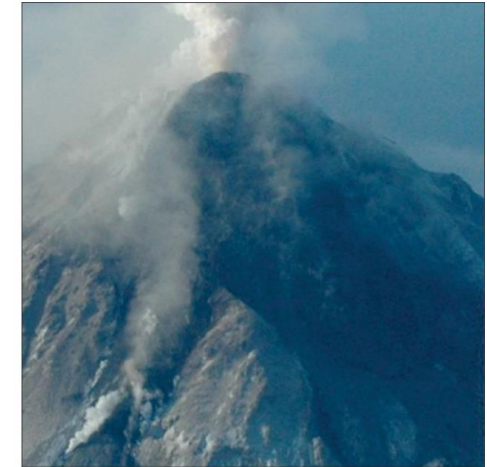
# MODIS/VIIRS MEASUREMENTS OF EMITTED SPECTRAL RADIANCE ACT AS AN EFFECTIVE PROXY FOR ERUPTION INTENSITY



2006 eruption of Mount Augustine, Alaska

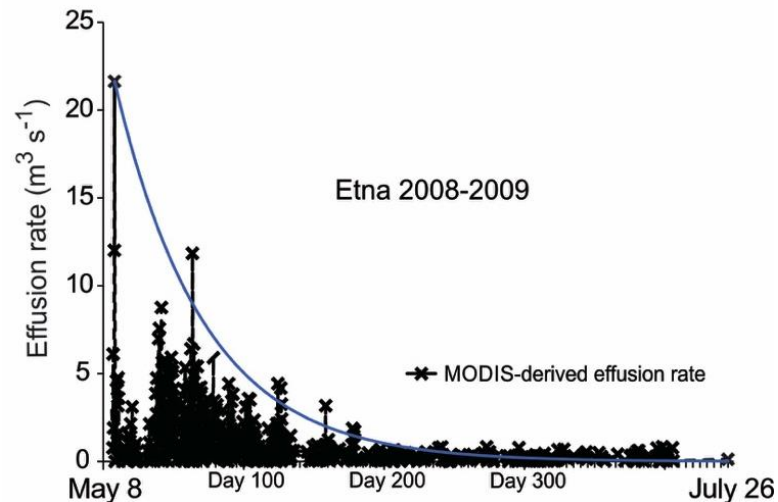
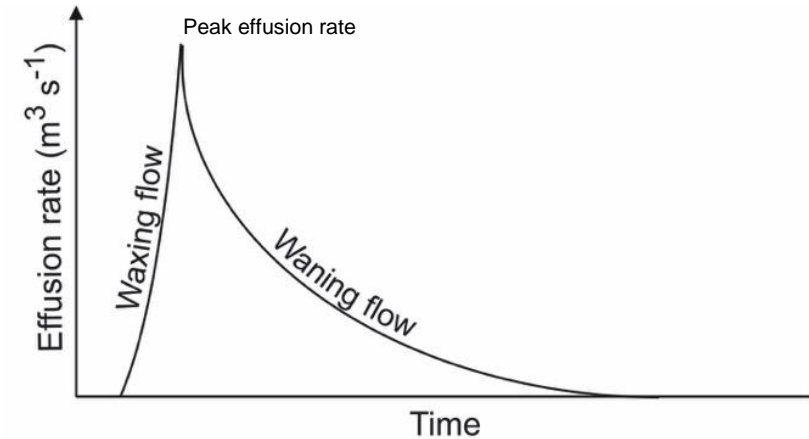
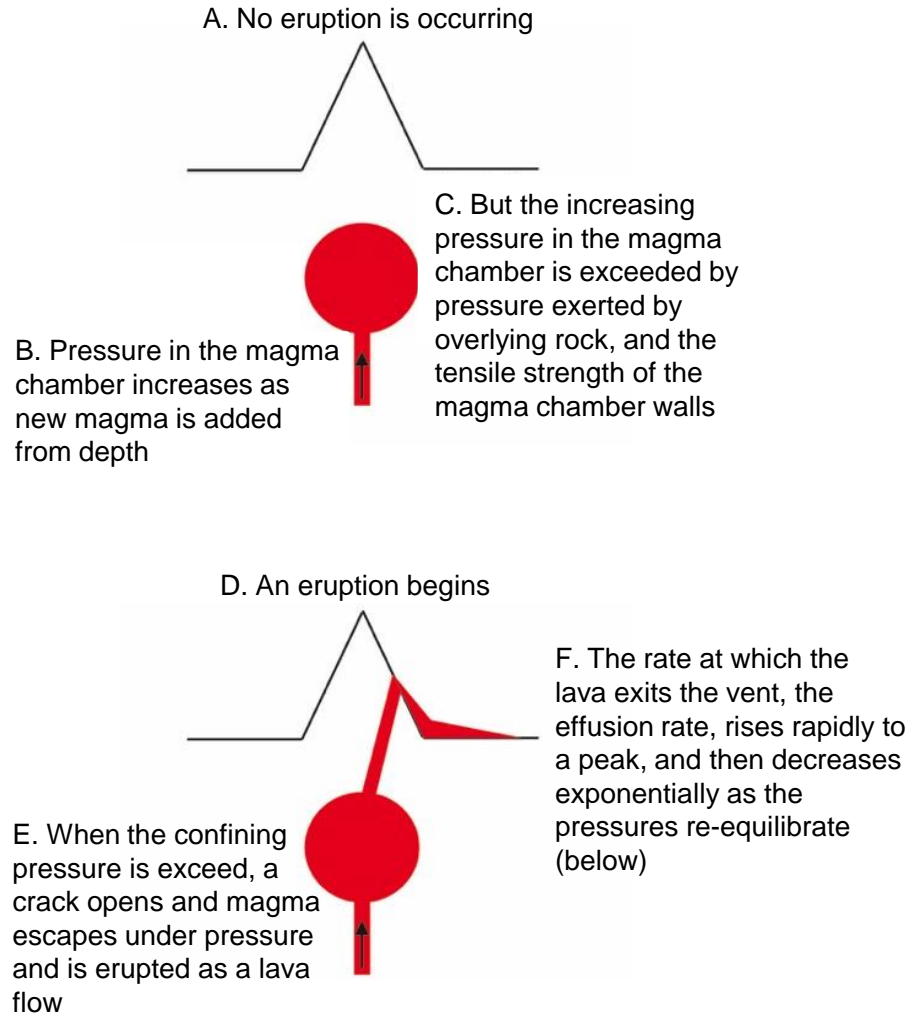


Source: AVO/USGS

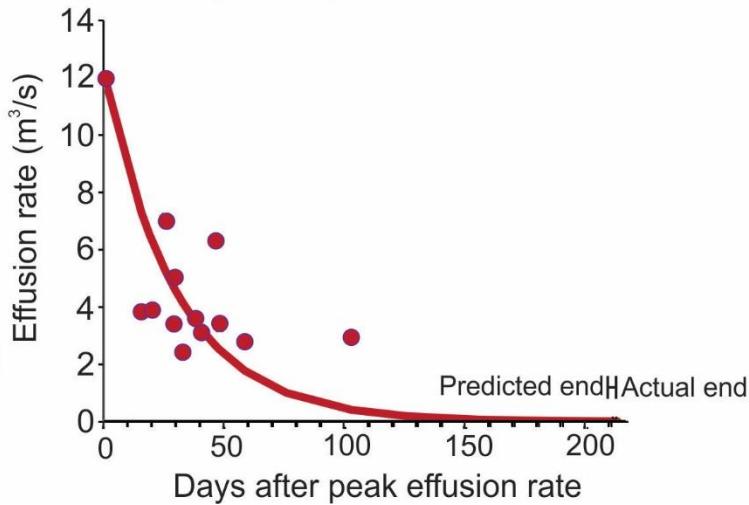
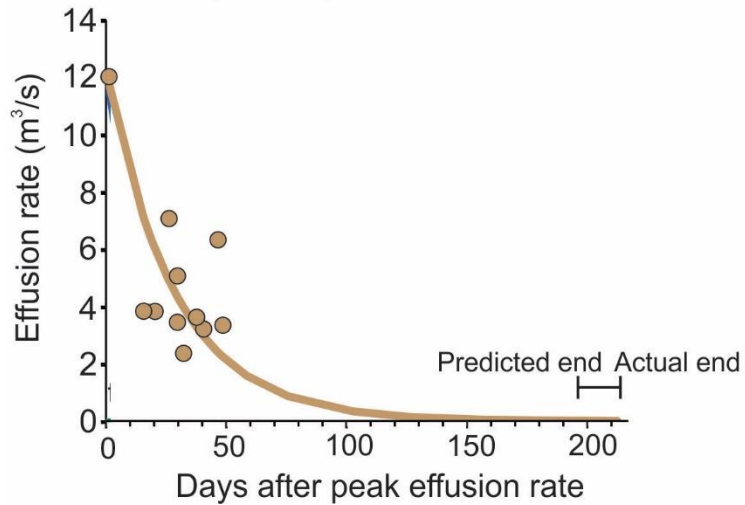
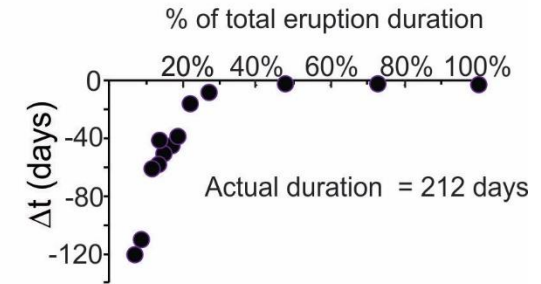
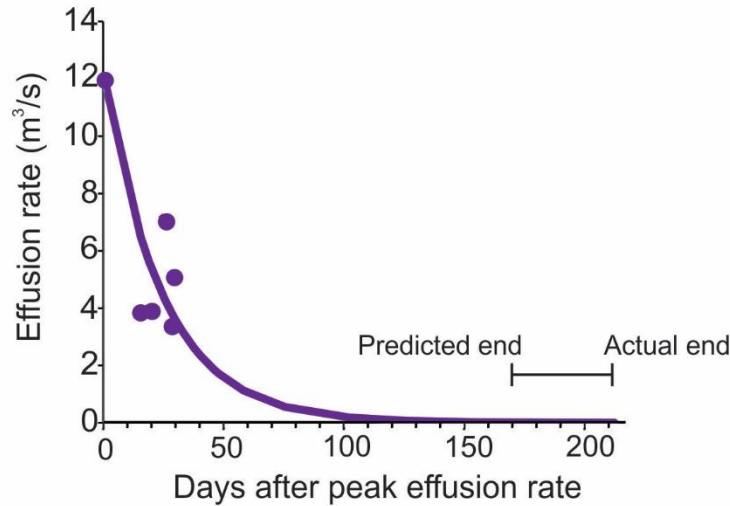
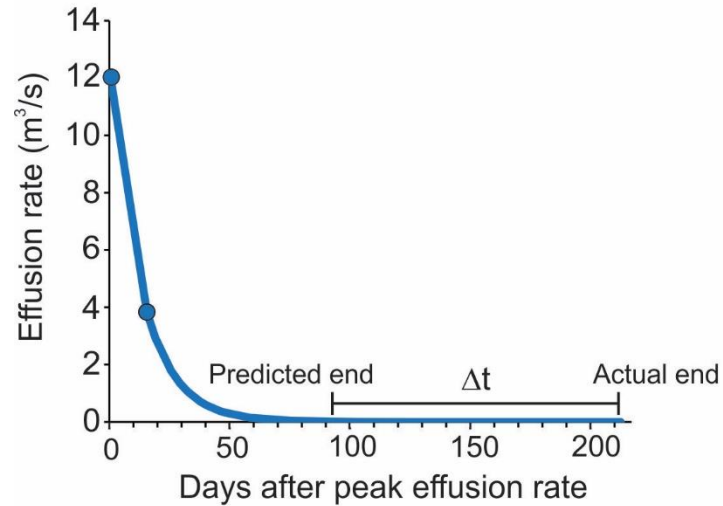




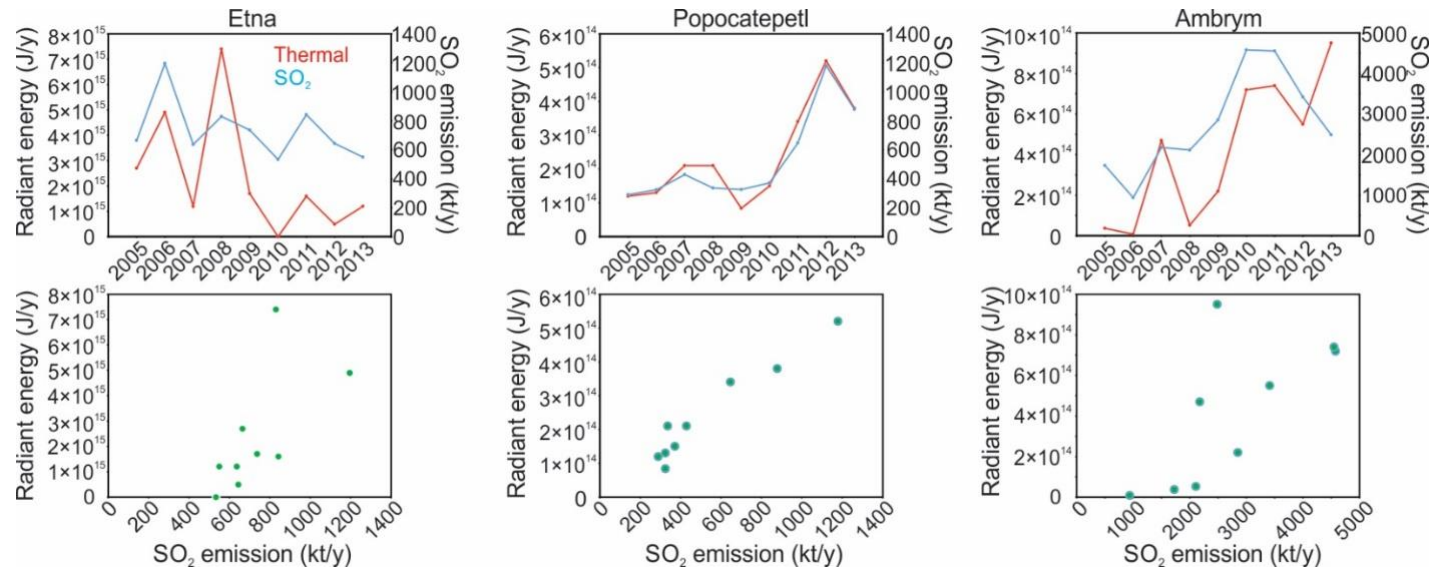
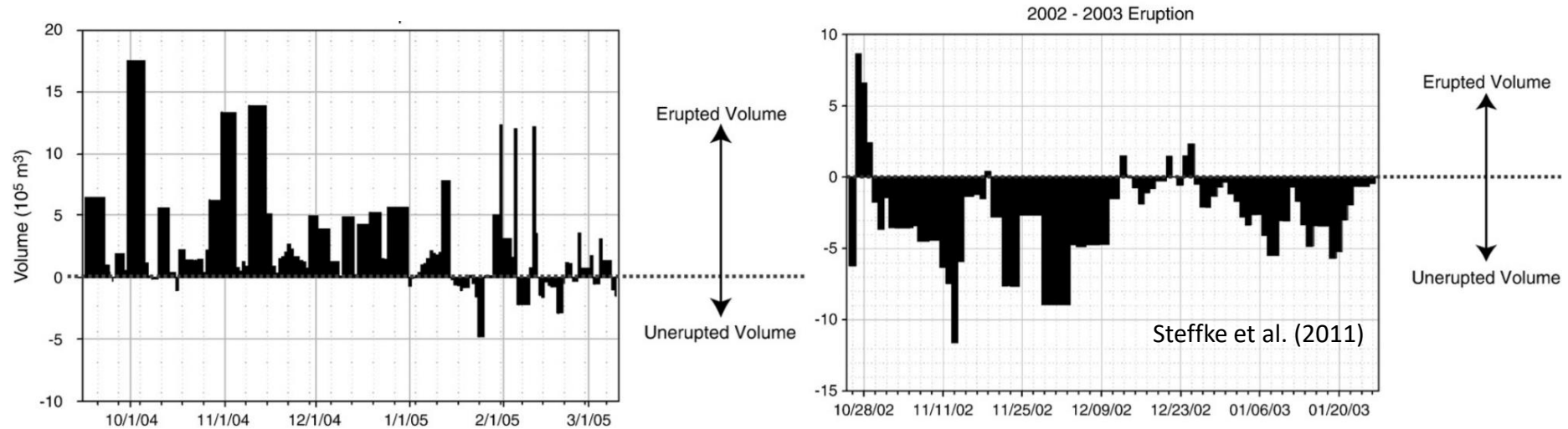
# LAVA EFFUSION RATE IS RELATED TO MAGMA SUPPLY: HOW DO THE MEASURED DECAY CONSTANTS VARY BETWEEN VOLCANOES OR AT THE SAME VOLCANO?



# WILL ALLOW US TO REFINE A METHOD FOR PREDICTING THE END OF ERUPTIONS FROM SPACE USING MODIS/VIIRS



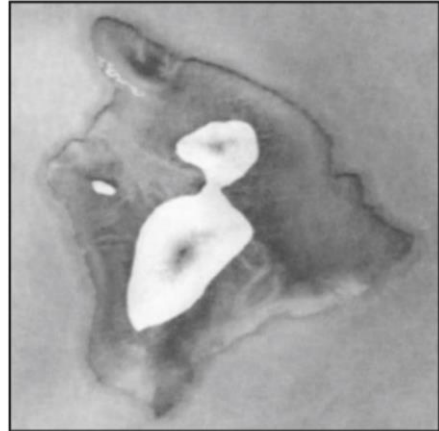
# HOW ARE MAGMAS PARTITIONED BETWEEN THE SURFACE AND THE SUBSURFACE?





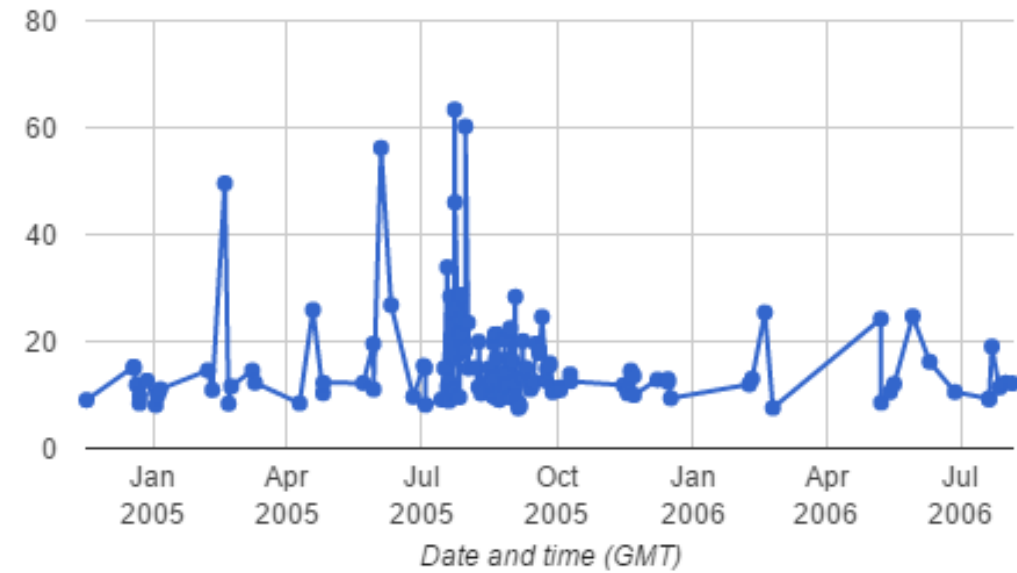


# POSSIBILITY OF CLOUD SCREENING/SCORING



MOD35, probability of  
being "cloud-free",  
for June 2001-2008

0% 50% 100%



Dec-26-2001, 8:45 GMT

